

RETI Phase 2 Draft Work Plan

August 14, 2008

Goal: Produce conceptual plans for providing transmission access to priority CREZ, developed with stakeholder involvement and including high-level estimates of financial cost and environmental feasibility. These plans will be incorporated in CAISO and POU 2009 transmission planning processes, providing the basis for commercial transmission projects.

Deliverables: An interim Phase 2 report identifying CREZ-specific transmission access solutions for priority CREZs. Each CREZ conceptual transmission plan is to include:

- A conceptual collector point (or points) that gathers output of multiple adjacent generating sites;
- New network and/or trunk line backbone facilities connecting one or more collection points to the EHV backbone grid;
- Rough cost estimate of the conceptual new network and/or trunk line connection facilities;
- High-level assessment, provided by the Environmental Work Group (EWG), that the conceptual routings for the identified transmission facilities above face no environmental fatal flaws;
- A phased expansion plan to address potential expansion of the priority CREZs, or addition of new priority CREZs in the same area, in order to connect additional generation in later years.

1.0 Study Plan

- 1.1 Form teams to develop conceptual transmission plans to access each priority CREZ. Each team will be led by a transmission provider. Activities of the teams will be coordinated by the Phase 2 Work Group.
- 1.2 Using the preliminary and final results from Phase 1B, identify the amounts and technology of power to be injected at specific points in each of the RETI time periods: near-term, by 2012; mid-term, 2013-2016; and long-term, 2017-2020.
- 1.3 Identify ways of connecting the common collector point or points to the existing EHV backbone grid in each of the three RETI time periods. Configure these as looped network connections to the greatest extent practicable, considering likely future expansion of the grid. Consider joint IOU-POU projects wherever appropriate.¹
- 1.4 Existing grid capacity - Assuming the new facilities identified in 1.3 are in place in each of the three RETI time periods, perform powerflow studies, if necessary, to identify the quantity of new renewable generation within each

¹ The Phase 2 study work will not consider operational control in determining the most practical locations to interconnect priority CREZ to the existing EHV system and in determining which network upgrades would make the most sense to accommodate increased renewable resource development within these CREZ.

priority CREZ or supra-CREZ that can be accommodated on the existing grid with no network upgrades.

- 1.4.1 Utilize established planning cases already in use by the CAISO and California transmission owners, modified as necessary to reflect base case assumptions developed in Phase 1A. All cases used shall be coordinated in their development and well documented in terms of their key assumptions. Set up benchmark cases with appropriate generation mix. Use CEC 1-in-10 load forecasts for each of the three RETI time periods. Depending on the conceptual plan for connecting each priority CREZ to the existing grid, each renewable generation technology (wind, solar or geothermal) within a CREZ may be modeled as a single generator to reflect differences in expected generator TOD output profiles. Use project output assumptions as specified in Phase 1B report.
- 1.4.2 Power from each priority CREZ will be scheduled into the California transmission grid, using specifications to be developed in conjunction with the ISO and information from the Phase 1B report.
- 1.4.3 Conduct powerflow studies for N-0 and N-1 contingency conditions assuming historical levels of imports into California during peak load periods which will include scheduled flow from renewable resources outside of California. For identified N-1 overloads of emergency ratings, controlled generation dropping is acceptable mitigation for up to 1150 MW for any single contingency. Load dropping is not permitted mitigation for either N-0 or N-1 overloads.
- 1.4.4 In addition to studying a peak load hour, determine whether it is necessary to study an off-peak hour in the event off-peak renewable energy generation might result in thermal overloads.
- 1.5 Expanded Grid Capacity - Starting with the amounts of new renewable generation in each of the priority CREZ identified in 1.4, add increments of renewable generation within each priority CREZ (up to the maximum feasible amount of renewable potential identified in Phase 1B) and perform powerflow studies to identify overloaded grid facilities at each increment.²
 - 1.5.1 Again, use project output assumptions as specified in Phase 1B report.
 - 1.5.2 Apply the same contingency analysis and mitigation options identified above: N-0 and N-1 contingencies where controlled generation dropping is acceptable mitigation for up to 1150 MW for any single

² The size of the increments studied is somewhat subjective and may be influenced by the maximum feasible development potential of the CREZ, the capability of logical network upgrades, and the amount of time available to perform the powerflow analysis and to identify the mitigation and/or network upgrades needed to resolve identified overloads.

contingency but load dropping is not permitted mitigation for either N-0 or N-1 overloads.

- 1.5.3 In addition to studying a peak load hour, determine whether it is necessary to study an off-peak hour in the event the selected increments of renewable generation might result in thermal overloads during off-peak hours.
 - 1.5.4 Where overloads are found, use the planning expertise and knowledge of the California grid represented on each CREZ team to identify network upgrades of the existing grid, including potential upgrades to import capacity, which would eliminate the overload.³
 - 1.5.5 Combine trunklines and/or the identified network upgrades for each of the priority CREZ identified in the previous steps, into a single preliminary plan that expands transmission access to all priority CREZs, to accommodate renewable generation that may be developed across the three time periods with sufficient energy production capability to meet the specified renewable resource goals.
- 2.0 This preliminary plan will be tested with powerflow analysis to verify the validity of the single combined plan. Conduct powerflow studies for N-0 and N-1 contingency conditions assuming historical levels of imports into California during peak load periods, which will include scheduled flow from renewables outside of California. For identified N-1 overloads of emergency ratings, controlled generation dropping is acceptable mitigation for up to 1150 MW for any single contingency. Load dropping is not permitted mitigation for either N-0 or N-1 overloads.
- 2.1 Use the results of this assessment to adjust the preliminary plan as needed, including taking advantage of synergies between CREZ connections or the individual plans.
- 3.0 **Stakeholder Plan.** Develop a schedule and process for inviting stakeholder comment on the CREZ connection plans under development, and for communicating Phase 2 work to key constituencies, including affected counties, and implement this process.
- 4.0 **Environmental Screening Plan.** With assistance of the EWG, develop and apply a methodology for identifying potential environmental fatal flaws that could preclude development of Phase 2 proposed conceptual transmission facilities.
- 5.0 **Timeline.**

September 5, 2008: Likely priority CREZ identified. CREZ-specific planning teams formed to study each CREZ.

³ Each CREZ team should consider evaluating three separate powerflow cases, one for each of the time periods to be studied. It will be necessary to coordinate across these cases because whatever upgrades are identified in the first time period will be present in the second and third time periods, and whatever upgrades are identified in the second time period will be present in the third time period.

October 1: SSC and PSG meetings; Phase 1B Report proposed for adoption; priority CREZ list finalized. Phase 2 stakeholder meeting schedule adopted.

October 13: Conceptual connection plans identified, from a conceptual collector point in each CREZ to the backbone grid. (Network upgrades, which will be identified as part of the powerflow studies, will not be included at this point).

October 20-24: Stakeholder meetings on conceptual connection plans.

October 16: All CREZ teams meet together, consider possibilities for joint IOU-POU projects.

October 27: Stakeholder comments due on conceptual connection plans.

October 29: Initial powerflow studies completed and preliminary mitigation plans and network upgrades identified. Environmental screening completed.

November 5: Conceptual cost estimates completed.

November 12: Draft conceptual plans circulated to SSC.

November 19: SSC reviews a draft of the interim Phase 2 report and conceptual plans, including cost estimates and expansion plans.

December 1: Stakeholder meeting to take comment on the interim Phase 2 report and conceptual plans.

December 8: Stakeholder comments due on the interim Phase 2 report and conceptual plans.

December 17: SSC meets, approves interim Phase 2 report with conceptual plans to be entered into the CAISO and POU 2009 planning processes.

January 2009: Conceptual planning continues for CREZ whose boundaries might be adjusted during Fall 2008 or for CREZ which the SSC decides should be studied on a lower-priority basis.

March 2009: SSC meets, approves final Phase 2 report which may include modifications of the conceptual plans included in the interim Phase 2 report.